

REMARKS

In view of the above amendments and the following remarks, further examination and reconsideration are respectfully requested.

I. Amendments to the Claims

Claims 1 and 12 have been amended to clarify features of the invention recited therein and to further distinguish the present invention from the references relied upon in the rejections discussed below.

In addition, new claim 17 has been added to depend from claim 1.

II. 35 U.S.C. § 103 Rejections

Claims 1, 4, 5, 7, 8 and 12-15 were rejected under 35 U.S.C. § 103(a) as being unpatentable over the combination of Dowdell (U.S. 5,301,263) and Joy (U.S. 5,043,923). Further, claims 9 and 10 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Dowdell, Joy and Narayanaswami (U.S. 6,160,557). These rejections are believed clearly inapplicable to amended independent claims 1 and 12 and the claims that depend therefrom for the following reasons.

Amended independent claim 1 recites a three-dimensional shape drawing device including a depth value calculation section for calculating a depth value of a pixel to be drawn, a high order Z-buffer memory for retaining high order bits of a depth value of a pixel to be displayed as a front face, and a low order Z-buffer memory for retaining low order bits of the depth value of the pixel to be displayed as the front face, such that a number of the low order bits is equal to or larger than a number of the high order bits retained in the high order Z-buffer

memory. In addition, claim 1 recites that the three-dimensional shape drawing device includes a high order Z-buffer clearing section for initializing the depth value of the pixel to be displayed as the front face and retained by the high order Z-buffer memory with a predetermined value, wherein the predetermined value indicates one of a shallowest depth value and a deepest depth value, such that, when the predetermined value is not the deepest depth value, the predetermined value is the shallowest depth value.

Initially, the Applicant notes that the above-mentioned 35 U.S.C. § 103(a) rejection acknowledges that Dowdell fails to disclose or suggest the “high order Z-buffer clearing section for initializing the depth value of the pixel to be displayed as the front face and retained by the high order Z-buffer memory with a predetermined value, wherein the predetermined value indicates one of a shallowest depth value and a deepest depth value” as previously recited in claim 1.

In light of the above, the present rejection relies on col. 8, lines 9-20 of Joy for teaching the above-mentioned features that are admittedly lacking from Dowdell. However, in view of the above-identified amendments to claim 1, which clarify the operation of the high order Z-buffer clearing section, it is submitted that Joy fails to disclose or suggest the above-mentioned distinguishing features now required by amended claim 1.

Rather, col. 8, lines 9-20 of Joy merely teach that after all bits of the Z-buffer memory are clear, the Z-buffer memory is initialized to a background having a deepest indication that can be displayed.

Thus, in view of the above, it is clear that Joy teaches that the Z-buffer memory is initialized to the deepest depth value, but fails to disclose or suggest that initializing the depth value of the pixel to be displayed as the front face and retained by the high order Z-buffer

memory with a predetermined value, wherein the predetermined value indicates one of a shallowest depth value and a deepest depth value, such that, when the predetermined value is not the deepest depth value, the predetermined value is the shallowest depth value, as recited in claim 1.

In other words, Joy merely teaches initializing the Z-buffer memory using the deepest depth value, whereas claim 1 requires the high order Z-buffer memory to be initialized using a predetermined value, such that when the predetermined value is not the deepest depth value, the predetermined value is the shallowest depth value.

Put another way, claim 1 now requires the high order Z-buffer memory to be able to be initialized using both the shallowest depth value and the deepest depth value, such that, the high Z-buffer memory is initialized with the shallowest depth value when the predetermined value is not the deepest depth value. In contrast, Joy requires the Z-buffer memory to be initialized always using the deepest depth value.

Therefore, because of the above-mentioned distinctions it is believed clear that claim 1 and claims 4, 5, 7-10 and 17 that depend therefrom would not have been obvious in view of the combination of Dowdell and Joy.

Furthermore, there is no disclosure or suggestion in Dowdell and/or Joy or elsewhere in the prior art of record which would have caused a person of ordinary skill in the art to modify Dowdell and/or Joy to obtain the invention of independent claim 1. Accordingly, it is respectfully submitted that independent claim 1 and claims 4, 5, 7-10 and 17 that depend therefrom are clearly allowable over the prior art of record.

Regarding dependent claims 9 and 10, which were rejected under 35 U.S.C. § 103(a) as being unpatentable over Dowdell and Joy (main references) in view of Narayanaswami

(secondary reference), it is respectfully submitted that this secondary reference does not disclose or suggest the above-discussed features of independent claim 1, which are lacking from the main references. Therefore, no obvious combination of the main references with the secondary reference would result in, or otherwise render obvious, the invention recited independent claim 1 and the claims that depend therefrom.

Amended independent claim 12 is directed to a method and recites features that correspond to the above-mentioned distinguishing features of independent claim 1. Thus, for the same reasons discussed above, it is respectfully submitted that independent claim 12 and claims 13-15 that depend therefrom are allowable over the prior art of record.

III. Conclusion

In view of the above amendment and remarks, it is submitted that the present application is now in condition for allowance and an early notification thereof is earnestly requested. The Examiner is invited to contact the undersigned by telephone to resolve any remaining issues.

Respectfully submitted,

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